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**Groping in the Void: The Problem of Battle
Handover in the AirLand Battle Future Environment**

**A Monograph
by
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Infantry**

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ABSTRACT

This monograph examines current U.S. doctrine on the subject of battle handover to determine its applicability to the conditions of maneuver war.

Army theorists are considering a new operational concept that assumes the likelihood of maneuver war in the years ahead. Known as AirLand Battle Future, the concept anticipates a nonlinear battlefield, deep and continuous operations, and rapid movement. The fluidity of operations on such a battlefield complicates the relationship between reconnaissance and combat units, both of which must coordinate closely during battle handover. These factors may force the Army to revise its current doctrine, which is founded on assumptions of battlefield linearity.

I have explored the theoretical relationship between reconnaissance and combat forces using the writings of several theorists. Clausewitz and Sun Tzu, in particular, made clear the importance of focusing scarce reconnaissance assets on the enemy's center of gravity and decisive points, which shift frequently in maneuver war. The intelligence thus generated is crucial in determining the best place to hand over the battle to combat forces.

Using theoretical and historical data (Erwin Rommel's actions during the battle of Caporetto in 1917) I have concluded that current U.S. doctrine on battle handover is not suited to the AirLand Battle Future environment. New doctrine is necessary that can accommodate the omnidirectional nature of maneuver war. It must be flexible, facilitate effective command and control, and protect the force. These three criteria provide the framework for the presentation of my recommendations.

CONTENTS

	Page
I: Introduction	1
II: Theoretical Relationship between Reconnaissance and Combat Forces	4
III: Historical Perspective	13
IV: Current Doctrine	19
V: Conclusions	29
Notes	38
Bibliography	42

I. Introduction

The publication of Field Manual 100-5, Operations, in 1982 was a watershed in U.S. military thought. After a hiatus of several decades, operational art enjoyed a renaissance in the form of a doctrine known as AirLand Battle. The doctrine matched emerging military capabilities to worldwide missions and called for sequential tactical engagements to achieve strategic goals.

AirLand Battle doctrine reflects the Army's approach to applying combat principles under the conditions of modern war. Designed for a fast-paced, lethal battlefield containing well-armed, well-trained adversaries, it calls on Army leaders to "throw the enemy off balance with a powerful blow from an unexpected direction, follow up rapidly to prevent his recovery and continue operations aggressively."¹ These actions must take place everywhere on the battlefield: deep behind enemy lines, close along the forward edge of the battle area (FEBA), and in our rear.

The emphasis on the deep-close-rear battlefield underscores the assumptions of linearity upon which our current doctrine is based. Field Manual 100-5, for example, directs commanders to "carry the fight into the depths of the enemy's formation or defense," while "protecting their rear areas and support forces."² "Deep" and "rear" have meaning only in relation to a

reference point: in this case the FEBA or a similar linear control measure. On a battlefield lacking such a frame of reference (e.g., in maneuver war) the utility of our doctrine is questionable.

In response to the shortcomings of linearity in AirLand Battle doctrine, Army theorists have pondered the nature of twenty-first century war. They envisioned the emergence of maneuver warfare characterized by nonlinear, continuous operations and rapid movement. Driving these changes were two factors: the likelihood of a smaller force structure and technological advances that would force dispersal of forces to enhance their survivability.

The specter of maneuver war prompted the Army to develop new operational concepts. One of the most promising, AirLand Battle Future, currently is under study at the U.S. Army Combined Arms Command at Fort Leavenworth. The new concept proposes methods to "detect enemy forces and intentions early and to destroy them with massive indirect firepower while avoiding an attrition battle in either an offensive or defensive role."³ Widely dispersed maneuver forces, if needed at all, would converge to complete the destruction begun by indirect fires.

The adoption of AirLand Battle Future will necessitate change in many areas of current tactical doctrine. One such area is battle handover, the point

in time when tactical responsibility for a zone or sector passes from one command to another. The nonlinearity of the battlefield complicates the relationship between the two friendly forces; without a FEBA and other linear control measures, coordination for passage of lines and battle handover becomes more difficult.

New doctrine on battle handover must meet three criteria. First, it must be flexible enough to conform to the random geometry of a nonlinear battlefield. Second, it must facilitate effective command and control over the myriad security, reconnaissance, and combat forces operating in close proximity of each other and the enemy. Finally, it must enhance the survivability of friendly units involved in the handover; that implies protection from friendly as well as enemy fires.

This paper will analyze current doctrine on battle handover in light of the conditions anticipated on the nonlinear battlefield. I will explore the theoretical relationship between reconnaissance and maneuver forces and employ historical examples to determine its validity. My conclusions will be a synthesis of theoretical principles and historical lessons applied to battle handover. Recommendations for modifying U.S. doctrine will be general in nature, primarily because

many of the broad tactical issues of AirLand Battle Future have yet to be resolved.

II. Theoretical Relationship between Reconnaissance and Combat Forces

In the modern lexicon of U.S. Army doctrine, reconnaissance is "a mission undertaken to obtain information by visual observation, or other detection methods, about the activities and resources of an enemy or potential enemy, or about the meteorologic, hydrographic, or geographic characteristics of a particular area."⁴ Information may be obtained through stealth, infiltration, movement, observation, eavesdropping, and special equipment. Reconnaissance elements may be dismounted, mounted, airborne, or spaceborne. Regardless of how it is done, its purpose is always the same: "to gather information on which commanders can base plans, decisions, and orders."⁵

Commanders have long understood the need for effective reconnaissance in war. Sun Tzu, the Chinese philosopher of the third century B.C., admonished generals to

determine the enemy's plans and you will know which strategy will be successful and which will not; agitate him and ascertain the pattern of his movement. Determine his dispositions and so ascertain the field of battle. Probe him and learn where his strength is abundant and where deficient.⁶

Recognizing the value of reconnaissance is one thing; obtaining the required intelligence is quite another. In most armies reconnaissance assets are too scarce to see everything. Even if resources were unlimited, the "fog" of war would cloud a complete picture of enemy strength, disposition, and intentions. The problem of acquiring good intelligence, according to Henri Antoine Jomini, was a "thing of utmost difficulty, not to say impossibility."⁷ The gap between what the commander knows about the enemy and what he would like to know "is one of the chief causes of the great difference between the theory and practice of war."⁸

Since intelligence assets are limited in number and ability, commanders must focus their reconnaissance effort to achieve the greatest return. They should seek to determine the principal sources of enemy strength while concealing their own. Similarly, they should strive to identify enemy weaknesses for exploitation during battle. Gathering such information allows the commander to concentrate combat power at the appropriate time and place. According to Sun Tzu:

If I am able to determine the enemy's dispositions while at the same time I conceal my own then I can concentrate and he must divide. . . . I can use my entire strength to attack a fraction of his. There, I will be numerically superior. Then, if I am able to use many to strike few at the selected point, those I deal with will be in dire straits.⁹

The idea of focusing on enemy strengths and weaknesses was essential to Carl von Clausewitz's theory of war. He asserted that in every operation there existed a certain center of gravity, "the hub of all power and movement, on which everything depends."¹⁰ Each side possessed its own center of gravity; at the tactical level it was virtually always the concentrated mass of the army. To achieve victory in war, the enemy's center of gravity had to be attacked with "all our energies" and destroyed.¹¹ Clausewitz deemed battle the most decisive means of accomplishing this task because only then did the centers of gravity of each belligerent collide.

The point at which the commander directs his main effort is the Schwerpunkt. First used by Clausewitz to define center of gravity, the term has since taken on new meaning in German military literature.¹² It now conveys the point of least resistance, where the friendly center of gravity is thrust against the enemy formation or defense. Upon forcing a penetration, follow-on units conduct flank attacks against remaining enemy forces. Reserve units pour through the widening gap to exploit success. The Schwerpunkt moves as the enemy reacts, but its location depends always on the same principle: "avoid the enemy's strength and hurl your strength against his weaknesses. You want to use judo, not fight a boxing match."¹³

Whereas the Germans conceived of a single Schwerpunkt," Jomini preferred the concept of "decisive points."¹⁴ These were physical objectives "for which we are willing to expend combat power, either in defense or in attack."¹⁵ Decisive points may include hilltops, crossroads, communications nodes, command centers, and supply sites; they might also be flanks, gaps, or weakly defended sectors of the enemy position. Their importance depends on the amount of effort required to attack or defend them and on the consequences to the commander's plan of seizing or losing them.¹⁶

The center of gravity, Schwerpunkt, and decisive points are closely related concepts. In the offense, seizure of decisive points weakens the enemy center of gravity. Conversely, retention of decisive points in the defense safeguards the friendly center of gravity. Defeating the opponent's overall plan first requires the proper identification of the decisive points upon which the enemy's center of gravity depends; then they must be denied to him. The most decisive point will likely become the Schwerpunkt, where the commander commits his center of gravity. Unless we can accurately locate decisive points and the Schwerpunkt, "then our own precious center of gravity will be wasted."¹⁷

While a commander must target the enemy's center

of gravity to achieve victory, in most cases he should avoid striking it head on. He should stay dispersed, massing only at decisive points to weaken indirectly the enemy center of gravity. The goal is to dilute the enemy's power without wasting one's own; that, according to Sun Tzu, is the "acme of skill."¹⁸

The concepts of center of gravity, Schwerpunkt, and decisive points are nowhere more important than on the nonlinear battlefield. In maneuver war the tactical situation changes rapidly, causing correspondingly rapid changes in the relationship between friendly and enemy forces. As the enemy center of gravity moves, the friendly commander must be proactive in finding new decisive points and in shifting the Schwerpunkt. Procrastination leads to loss of initiative, a dangerous failing in an environment devoid of clear delineation between friendly and enemy forces.¹⁹

The nature of maneuver war makes reconnaissance a vital battlefield function. Whether in offense or defense, reconnaissance forces are one of the commander's principal means of identifying centers of gravity and decisive points. They monitor the changing tactical situation, detecting movements in the enemy's center of gravity and facilitating shifts in the Schwerpunkt. As part of the latter mission, they may be called upon to guide combat units through the

battlefield clutter and natural obstacles along the new axis of advance. In this event they are ideally situated to conduct a battle handover with friendly combat units.

Maneuver war requires an extremely close relationship between reconnaissance and combat forces. Reconnaissance elements swarm invisibly over the enemy, revealing his intentions and sensing where he is strong and weak. The intelligence thus generated enables the commander to shape the battlefield by pitting the strengths of his combat units against enemy vulnerabilities. Sun Tzu likened the orchestration of reconnaissance and combat forces to the movement of water:

Just as flowing water avoids the heights and hastens to the lowlands, so an army avoids strength and strikes weakness. And as water shapes its flow in accordance with the ground, so an army manages its victory in accordance with the situation of the enemy.²⁰

What else does it take to be successful in maneuver warfare? Retired Air Force Colonel John Boyd has theorized that success depends on making one's own decision-making process more efficient than the enemy's. The process begins by observing the enemy, which allows the commander to orient himself to the situation. On the basis of this data he decides how to apply combat power and, finally, he acts. This process, known as the "OODA" (observation-orientation-

decision-action) cycle is never ending: the commander's actions change the situation, requiring the cycle to start over.²¹

War, especially the nonlinear type, is a series of time-competitive OODA cycles. The side that observes, orients, decides, and acts more quickly than the other gains a decisive advantage. As the slower side tries to react, it falls farther behind the quicker, which is already acting anew. The faster commander operates within (i.e., more quickly than) his opponent's OODA cycle to sow confusion and fear and to "generate mismatches" between what the enemy observes and how he responds.²² The result is to push the slower adversary "beyond his moral, mental, or physical capacity to adapt or endure, so that he can neither divine our intentions nor focus his efforts."²³

Reconnaissance is indispensable to a rapid OODA cycle. It permits early observation of the enemy and timely orientation of friendly forces. It helps to reveal the enemy center of gravity and decisive points, thus allowing the friendly commander to establish the Schwerpunkt and commit forces there quickly. It detects movements in the enemy center of gravity that lead to shifts in the main effort. Good reconnaissance therefore promotes efficient decision making and retention of the initiative.

Unfortunately, maneuver warfare makes the job of conducting reconnaissance more difficult. One reason

is that intelligence gatherers cannot limit observation merely to their front; they must orient their gaze omnidirectionally. Enemy elements, operating to the flanks and rear of friendly forces, compromise the safety and effectiveness of reconnaissance units. Another reason is that the fluidity of nonlinear movement complicates the effort to process raw data into usable intelligence. Rapid changes in the tactical situation therefore demand a highly efficient intelligence apparatus. Finally, the need for greater coverage requires an increase in the size or technical capability of the reconnaissance force.

In maneuver warfare the commander not only accepts confusion and disorder as a means of unbalancing the enemy, but purposely generates it.²⁴ Friendly and enemy forces mix routinely, and subordinate commanders act autonomously in fulfilling the higher commander's intent. The apparent disorganization of nonlinear war benefits the commander whose reconnaissance forces more accurately reveal the opponent's overall scheme of maneuver.

While conservative commanders balk at exposing unnecessarily their flanks and rear, Richard Simpkin criticizes the fear as groundless. Tactical risk is not dependent on the "posture" -- that is, the linear or nonlinear nature of conflict -- "but on the quantity and quality of information available to the

commander."²⁵ In maneuver warfare, the side that can gather intelligence concentrically instead of linearly will emerge victorious. The traditional picture of a transverse line of reconnaissance, "however many 'antennae' and salients may protrude from it, just will not do. The image needs to be one of a net cast deep."²⁶

The foregoing discussion of the theoretical relationship between reconnaissance and combat forces allows us to draw several conclusions. First, commanders must be selective in the information they seek. Since their reconnaissance assets are limited, they must focus their efforts on identifying the enemy's center of gravity and decisive points. With this information the commander can determine the location of the Schwerpunkt.

Second, the need for reconnaissance is the same in the offense and the defense. Each side has a center of gravity and decisive points that are the focus of the adversary's attention.

Third, effective reconnaissance allows the commander to shorten his OODA cycle. This is particularly important in maneuver war, where each commander strives to seize and retain the initiative.

Fourth, reconnaissance is more important -- and more difficult -- in maneuver war than in linear war. In nonlinear conditions reconnaissance forces face the

burden of all-around observation, whereas in linear war they direct their gaze principally to the front.

Finally, reconnaissance forces are well suited to facilitate battle handover, both in offense and defense. Assuming they are numerous enough to maintain continuous contact with the enemy, they can direct friendly forces away from his strength and toward his weakness.

III. Historical Perspective

During World War I both sides sought ways of breaking the stalemate on the Western Front, which had immobilized armies and exacted prodigious casualties. The interminable trenches had forced the combatants into a bloody war of attrition characterized by suicidal charges across the no-man's land separating them. They searched for ways to break the stalemate -- poison gas, airplanes, tanks -- but none of the new weapons were capable of returning maneuver to the battlefield. The impasse lasted until late in the war.

In response to the bloody stalemate, the German high command published The Attack in Position Warfare in January 1918. The manual contained a new warfighting doctrine known popularly as "Hutier," but more accurately as "infiltration" tactics.²⁷ The doctrine, distilled from the lessons of the previous four years, was equally effective in the offense and

the defense. It called for the use of reconnaissance as a means of penetrating linear defenses and striking into the depth of the enemy. At every echelon of command it emphasized surprise, continuous attack, and retention of the initiative.²⁸

Infiltration tactics required the German units to organize themselves in depth and move quickly to protect their flanks and rear. Small, specially trained "storm," or infantry assault, units would lead the attack, probing the enemy for weakly held areas and guiding follow-up forces through the gaps. The storm units were task organized from a storm battalion organic to each field army (lower commands sometimes organized their own storm battalions). A typical storm battalion consisted of one to five storm companies, one or two machine-gun companies, a flamethrower section, an infantry gun or howitzer battery, and a trench mortar company.²⁹

Prior to initiating an attack, the lead division would receive a storm battalion from the controlling army group. The attack would begin with regular infantry units probing enemy lines to identify the paths of least resistance. Close on their heels were the storm troopers, who penetrated the weak points and began enveloping the enemy. The storm units' heavy weapons, about 150 meters behind, supported the progress and protected the flanks of the penetration.

The last wave consisted of the remainder of the division and any other follow-on forces. Their mission was to reduce isolated pockets of resistance (bypassed by the storm units), provide reinforcements, and maintain the momentum.³⁰

The storm trooper techniques and new infiltration doctrine provided an effective alternative to the traditional and immensely costly frontal assault. They emphasized speed and timing as essential for continuous advance. Most important, they called for autonomous action by small units and individual soldiers. The opportunities on the nonlinear battlefield were too fleeting to be exploited by an army rigid in its tactical mindset; the Germans therefore prized the self-directed and innovative leader.³¹

Few Germans demonstrated more clearly the principles of infiltration tactics than Erwin Rommel, a lieutenant during the Great War. Unlike the majority of his fellow German officers, he avoided the stultifying experience of trench warfare then raging in France.³² Instead, as a company and detachment commander in an elite mountain battalion he participated in the mobile campaigns in Rumania, Austria, and Italy. He operated autonomously and with great initiative, achieving extraordinary tactical success. His famous exploits of maneuver during World War II owed largely to the experiences derived during

the nonlinear phases of the First World War.

During the battle of Caporetto in October 1917, Rommel's detachment faced an Italian infantry regiment on Kuk mountain.³³ Italian forces had been attacking, but their momentum had dwindled; now they were digging in blocking positions on two rocky hilltops separated by a saddle. Rommel worried that the Italians, if given enough time, would renew the offensive with supporting fires from the strongpoint. He therefore decided to preempt an Italian attack with one of his own.

Unsure of the exact strength and disposition of the enemy, Rommel organized his forces. He assembled two small assault teams of sixteen men each to probe for gaps in the defense. Supporting them with overwatching fires were a reinforced machine-gun company and two heavy batteries of artillery. Once the supporting fire commenced Rommel planned "to feel out the hostile positions with the assault teams," which were to identify gaps in the defense and avoid decisive engagement.³⁴

One of the two teams made slow progress as it ran unexpectedly into heavily defended sectors. The other, however, "vaulted" out of view and advanced rapidly. By "hugging the camouflage" and moving behind the masking fires of the German artillery and machine guns, it reached the saddle which turned out to be lightly

defended.³⁵

Before the Italians could react, Rommel launched his main attack. A force of two rifle and two machine-gun companies, which had waited in concealed positions, poured through the weak spot the assault team had identified. The rapid penetration unnerved the Italian defenders, who surrendered by the hundreds to both the assault teams and main body.

The local victory was complete, but Rommel pressed his advantage:

Did not the camouflaged ridge road, swinging around the south slope of Kuk and its garrison, offer an attractive and far-reaching advance? I had visions of cutting off the Kuk garrison. To be sure, I had to figure on fighting additional strong reserves on the south slope . . . But on the other hand, I knew that no task was too difficult for my mountain troops . . . and I did not hesitate to advance. The attack continued.³⁶

By late morning of the same day the main body had encircled the entire Kuk garrison and captured over 2,000 prisoners.

Rommel's success at Kuk mountain resulted from the shortening of his OODA cycle relative to the Italian commander's. The assault teams' reconnaissance uncovered the decisive point (the lightly defended saddle) which compromised the enemy center of gravity (the defenders' main body); Rommel therefore was able to orient, decide, and act faster than the Italians could respond. Each reaction of the defenders fell

farther and farther behind the changing situation, which was controlled by the German commander. Rommel's advancing columns frequently "ran into an unsuspecting enemy standing or marching down the road." Artillery batteries, supply trains, and reserve infantry formations "were all paralyzed by our sudden appearance."³⁷

During the interwar years the Germans continued to improve their techniques for maneuver warfare. Inspired by the writings of J.F.C. Fuller and Basil H. Liddell Hart, innovators in the Wehrmacht adapted old doctrine to new technology. They coupled the infiltration tactics of World War I with the tank, motorized artillery, tactical aircraft, motor transport, and electronic communications. The result was a potent tactical doctrine, popularized as "blitzkrieg." It called for armored penetrations against weakly held enemy positions, followed up by infantry and supported by air and artillery.³⁸

The tactical success of blitzkrieg owed to several factors. The Germans gathered intelligence through vigorous reconnaissance, which they used to determine the location of the Schwerpunkt. Armored reconnaissance (storm) units infiltrated in advance of the tank columns to find gaps in the enemy's position. Once identified, armored assault teams would widen the breaches, cut lines of communications, disrupt

movement, and paralyze the enemy's command. Close behind were the infantry follow-on forces to consolidate the gains of the more mobile units.

The interaction of reconnaissance and combat units was clearly the most critical element of the German's success. Each wave of assaulting combat power relied on the previous one to identify the best route of attack. The unrelenting momentum and unpredictable direction of advance crippled the enemy's ability to react. The German's success in maneuver warfare resulted from operating on a shorter decision cycle; that is, "being consistently faster through however many OODA loops it takes until the enemy loses his cohesion -- until he can no longer fight as an effective, organized force."³⁹

IV. Current Doctrine

Battle handover is a transfer of responsibility for fighting the battle. In the attack, it occurs as one friendly force passes through another to make contact with the enemy. In the defense, it happens when main battle area (MBA) forces assume control of the fight from security forces, and is coincident with the latter's rearward passage of lines.⁴⁰

Though simple in concept, the handover is a complex activity requiring precise coordination between participating units. Commanders must decide when,

where, and how the handover occurs; the decisions depend in large part on a full exchange of information between passed and passing forces. Commanders also must anticipate the friction arising from enemy pressure, the natural environment, and moral forces. Finally, they must synchronize their assets -- combat, combat support, and combat service support -- to ensure a smooth transition of responsibility.

Battle handover is a particularly vulnerable time for friendly forces. The passage of one unit through another, regardless of direction, compromises operational security and deception. Additionally, the concentration of forces, if discovered, offers lucrative targets for enemy area weapons -- conventional, chemical, or nuclear. The dangers are especially great in the defense, since the handover may occur under enemy pressure. As security forces withdraw past the battle handover line to their passage points, they may reveal the location of the defending units and obstacles. If the enemy is then able to template friendly forces, the results of the subsequent fire strike could be devastating.⁴¹

Current doctrine on battle handover is based on assumptions of linearity.⁴² In the defense, the commander establishes a sector delineated by lateral and rearward boundaries, a FEBA, and a forward line of own troops (FLOT). A covering force occupies the area

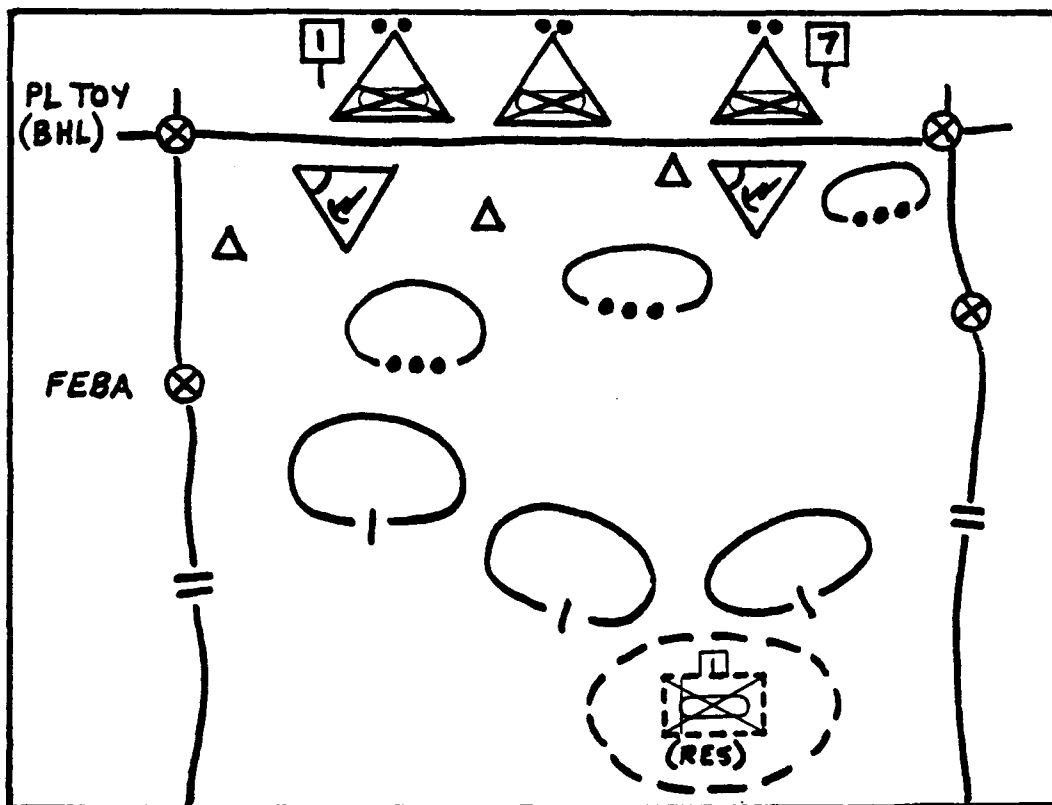


Figure 1: Heavy battalion task force in the defense awaiting battle handover from covering force. Company teams occupy battle positions along the FEBA. Three platoons from the reserve team comprise the security force. They occupy separate battle positions behind the battle handover line and provide overwatching fires in support of withdrawing covering forces. The scout platoon conducts reconnaissance and remains forward of the FEBA for as long as the tactical situation permits. (FM 71-2, 4-29)

between the FEBA and FLOT. Its mission is both reconnaissance (report enemy activity) and security (shape the battle through direct and indirect fires). Concurrently, it maintains contact with adjacent covering forces and especially with MBA units (Figure 1).

The headquarters that establishes the covering force prescribes various control measures. It designates passage points and routes to facilitate the rapid movement of covering forces rearward through the MBA. It locates contact points where vital information is exchanged, and fire control measures to prevent fratricide. Finally, it traces a battle handover line, usually 2 to 4 kilometers forward of the FEBA, where MBA forces can mask the withdrawal of the covering force with direct and indirect fires.

The offensive handover likewise reflects linear assumptions. The commander of the stationary unit designates contact points and passage lanes, through which the passing force will exit friendly lines. Battle handover may occur at a specified time (e.g., when passing units reach the passage lane) or place (e.g., at the battle handover line). Prior to the handover, the stationary unit commander assumes tactical control (TACON) over the passing unit; after the handover, the relationship is reversed until the passing unit moves beyond the range of the stationary unit's direct fires.⁴³ These measures would be unnecessary in an environment devoid of continuous lines, since the moving unit could go around -- instead of through -- the stationary unit.

Whatever the geometry of the battlefield, there are several important considerations in conducting a

handover. First, command and control procedures must provide for continuous update of intelligence from all sources, which must then find its way into the decision-making processes of commanders at every level. Second, the time and place of the handover should be consistent with the commander's intent. A covering force, for example, may have the mission of delaying the enemy until defensive preparations in the main battle area are complete. Finally, the commander should plan the handover to shape the battlefield to his advantage. This might entail forcing the enemy to deploy prematurely as he is attrited through direct and indirect fires. A scheme of maneuver that addresses these considerations is likely to allow the commander to gain or retain the initiative.⁴⁴

If battle handover were not difficult enough, executing it in a nonlinear environment increases the challenge. Security forces would no longer operate "forward" or "rearward" of friendly lines; rather, they would occupy whatever area of interest the commander designates. Friendly and enemy forces would intermingle routinely, thus rendering concepts such as "rear area" obsolete. Decentralized operations over the breadth and depth of the theater would be the norm.

An examination of the four-phase AirLand Battle Future concept reflects these features of nonlinear warfare.⁴⁵ In the first phase the commander (typically

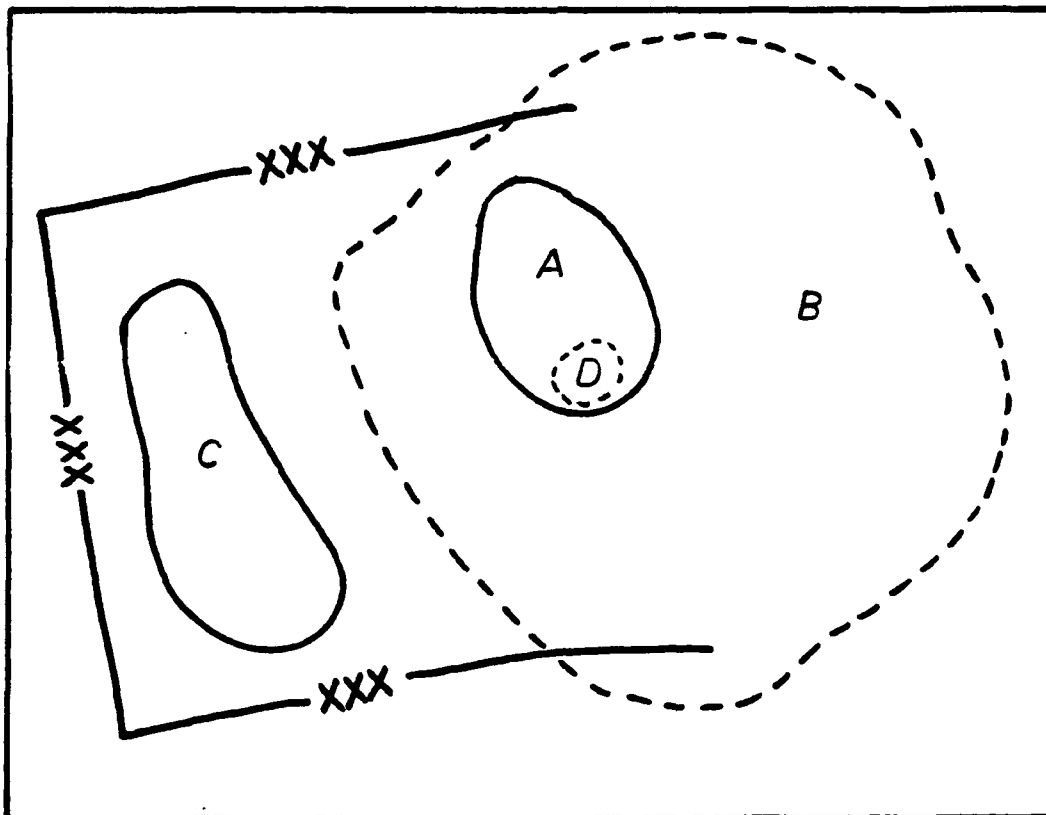


Figure 2: Corps area of operations in AirLand Battle Future environment. The commander designates a battle area (A) where the enemy will be killed. It is a subset of the detection zone (B), in which the commander develops intelligence about future enemy activities that may influence corps operations. In the tactical support area (C), the commander protects and sustains his combat forces; once committed, combat forces may concentrate in assembly areas (D) just prior to engaging the enemy.

at corps level) establishes a "detection zone" into which he commits information-gathering assets to observe and report on the enemy (Figure 2). The assets are human and electronic, active and passive, mobile and stationary. They operate deep in the enemy rear and are introduced as early as possible in the conflict

(preferably before it begins). The surveillance assets locate and track high-value targets, particularly nuclear delivery means, command centers, communications nodes, artillery groups, and massed armor formations.

While much of the intelligence comes from echelons above corps, most of it is the work of the reconnaissance task force, which may consist of aviation, armored cavalry, light infantry, and engineers, all supported by indirect fire.⁴⁶ The reconnaissance task force is the senior major subordinate command in the detection zone. It provides command and control, assumes terrain management responsibilities, and coordinates the efforts of intelligence-gathering assets located there. Its key role is to verify target data for the subsequent corps firestrike.

During Phase 2 the corps commander unleashes long-range, indirect fires to weaken the enemy, with the intent of setting the conditions for the close battle. The corps fire support element coordinates the indirect attack, using available weapons at their maximum ranges. They include long-range artillery (especially multiple-launch rocket systems), Army aviation, Air Force and Navy attack aircraft, and, in rare cases, ground maneuver forces. Electronic warfare assets enhance the destructive effect of the firestrike by

jamming the enemy's command, control, and communications nodes and by neutralizing his counterfire capability.

The reconnaissance task force plays a vital role in providing targeting data to the fire support element. Positioned throughout the depth of the corps area, it remains in constant contact with the enemy. It tracks the movement of targets and assesses the destructive effect of the firestrike. During the subsequent maneuver phase it continues to support the corps effort by calling for indirect fires to isolate the battlefield. Each of these missions dictates that it not become decisively engaged.

The corps commander initiates Phase 3 upon determining that the conditions for close battle have been met. Brigade-size task forces, under the control of tactical division headquarters, maneuver from dispersed assembly areas to complete the destruction begun by the firestrike. Combat units would normally have the mission of occupying a battle position or conducting a movement to contact. In either case, the ensuing engagement would be quick and violent as attacking forces would employ a combination of direct and indirect fires against an already weakened enemy.

The reconnaissance task force, by remaining in contact with the enemy, assists the attack in several ways. It provides advanced warning and limited

protection to combat support and combat service support elements operating in the detection zone. It continues attriting the enemy through indirect fires, and thereby shapes the battle as friendly combat units draw near. Most important, it identifies enemy weak points and vectors maneuver elements to them; this is critical in avoiding costly attrition battles that would result from a chance collision between opposing forces.

The last phase of the AirLand Battle Future concept begins once the enemy has been destroyed. The commander reestablishes the corps zone and redeploys the reconnaissance task force in anticipation of renewed conflict. Maintenance elements repair damaged equipment and combat units begin recovery operations.

A common element of all phases of AirLand Battle Future is reconnaissance. Before the enemy is engaged, reconnaissance forces generate information critical in developing the commander's decision support template. Once Phase 2 begins, they provide direct-sight observers for long-range fires and casualty assessment. They facilitate battle handover at the start of Phase 3 by bringing combat power to bear at the most decisive point. Afterwards, they forewarn the commander of further threats to the corps zone.

The reconnaissance task force in an AirLand Battle Future environment equates to the covering force of our current doctrine. It combines reconnaissance and

security -- two distinct missions -- under one headquarters. It performs the former mission while observing and reporting enemy actions; the latter is accomplished by calling for indirect fires during Phases 2 and 3. Reconnaissance elements shape the battle in anticipation of the commitment of combat forces. When those forces begin their movement, the reconnaissance task force guides them forward and hands over the battle at the decisive point.

Despite the similarities between the future reconnaissance task force and the contemporary covering force, there are important differences. The reconnaissance task force, light and mobile, would be unable to maneuver against the enemy as a cavalry unit might. It would avoid direct-fire or decisive engagement except in self-defense or as part of a counterreconnaissance campaign. Furthermore, its organization would permit greater dispersion, longer and more secure communications, and more decentralized operations. This is in contrast to the potent cavalry units of today, which trade combat power for battlefield stealth.

V. Conclusions

In anticipation of the fluid conditions of AirLand Battle Future, current doctrine on battle handover must change. Designed for the linear battlefield, it is unsuited to the omnidirectional combat of maneuver war.

Regardless of the offensive or defensive situation, combat operations in AirLand Battle Future "will be structured in an offensive nature."⁴⁷ New doctrine therefore must address the forward handover as much as current doctrine stresses battle handover in the defense.⁴⁸ In either scenario, the handover will occur at the transition from Phase 2 (fires) to Phase 3 (maneuver) of the AirLand Battle Future concept.

The convergence of enemy and friendly forces at the point of the handover requires a doctrine which stresses flexibility. One means of achieving it is to adopt the concept of "recon pull." Based on Liddell Hart's "expanding torrent" theory, recon pull is a method of finding and exploiting enemy weakness before committing major combat units. Reconnaissance forces fan out to find the enemy and identify decisive points. Armed with continuous reconnaissance reports, combat units choose routes and axes that will hit the enemy where he is most vulnerable. The resulting movement should follow the "path of least resistance, naturally widening those soft spots that are found by pouring more forces through them."⁴⁹

Recon pull in maneuver warfare requires sufficient reconnaissance forces for all-around coverage. Like Rommel's assault teams at Kuk mountain, they must be capable of swarming over a target area, identifying centers of gravity and decisive points, and remaining in contact with the enemy. Additionally, they are forward observers for long-range indirect fires and guides for combat forces traversing the battle area up to the point of handover.

Considering the diversity and difficulty of these missions, the U.S. Army has too few reconnaissance assets to conduct effective recon pull. The corps cavalry regiments, division cavalry squadrons, and battalion scout platoons physically cannot cover the wide frontages and depths typical of nonlinear conditions. Even if they could, the security and combat missions often assigned these units would make them less able to concentrate solely on reconnaissance.

The consequence of this shortfall is a reliance on "command push," the technique of selecting an axis, based on staff and command estimates, prior to the start of an operation. The commander pushes as many forces down the axis as necessary to achieve success. Although he might direct reconnaissance units to precede the attack, he has no way of knowing if another axis would have posed less enemy resistance. This results in battles of attrition, where friendly

strength is hurled directly at enemy strength. Command push is the opposite of recon pull and, partly because of the paucity of our reconnaissance assets, characterizes U.S. combat operations.⁵⁰

To rectify the shortcomings of our current organization, and thereby avoid the dangers of command push, we might consider the Soviet model for tactical reconnaissance. Each Soviet division has an organic reconnaissance battalion, and regiments have a company. While there are no organic reconnaissance elements at battalion and company level, those commands task organize themselves routinely to provide early warning. The integration of reconnaissance at all levels gives the Soviet army a decided advantage in nonlinear conditions. Notes Richard Simpkin, "the Soviets can fair regard the deep battle as a low-risk operation because they devote substantial resources to the gathering, processing and dissemination of information over the whole depth" of the battlefield.⁵¹

Besides enhancing flexibility through recon pull and organizational change, future doctrine should assure effective command and control during battle handover. Reconnaissance forces must provide reliable and continuous information to commanders, who must in turn commit combat forces to battle. The interaction of these two types of forces so close to the enemy makes synchronizing battle handover challenging at best.

One way of easing the difficulty is to maintain unity of command. All elements within the detection zone should be attached to, or under the operational control (OPCON) of, the reconnaissance task force commander. Not all of them will be intelligence gatherers. Some, like artillery, engineer, and chemical detection units, will have combat support missions in anticipation of the commitment of combat forces; others may be involved with deception.⁵² Regardless of their mission, they should report directly to the reconnaissance task force commander, who knows best the enemy situation and can prevent movements or activities that compromise the overall intelligence campaign.

In light of the command and control problems of battle handover, commanders must avoid an over-reliance on electronic reconnaissance. Combat forces closing in on the enemy need face-to-face coordination with someone who has seen the enemy, traveled the routes, and experienced the hardships of war. Photographs, computer printouts, and sensor readings are important aids to the reconnaissance effort, but alone they cannot convey the moral, physical, and cybernetic forces influencing the battle.

In subsequent years advances in surveillance technology will tempt Army planners to trim the size of reconnaissance units. That may save money in the near

term, but the long-term effect will be to distort our vision of the battlefield. Battle handover in nonlinear conditions requires real-time intelligence on the enemy and terrain. No matter how good they are, electronic devices cannot substitute for human reconnaissance; they break, wear out, and are degraded by adverse environmental conditions. The same can be said of human beings, but for one difference: a well-trained, well-led soldier is more versatile and innovative than something which must be programmed. Given adequate time and resources, he will find a way to accomplish the reconnaissance mission.

Another method of enhancing command and control during the handover entails detaching an appropriate piece of the reconnaissance task force to the division headquarters conducting the ground attack. As Figure 3 illustrates, the reconnaissance sub-element (squadron) closest to the anticipated battle area is placed under OPCON to the maneuver division commander as the latter unit moves to its tactical assembly area. During the conduct of the division attack, the squadron provides route reconnaissance, exchanges battlefield information with the division, and provides guides for the commitment of brigades into battle; concurrently, it maintains contact with the enemy to detect shifts in the center of gravity and to continue calling for indirect fires. Once the handover is accomplished --

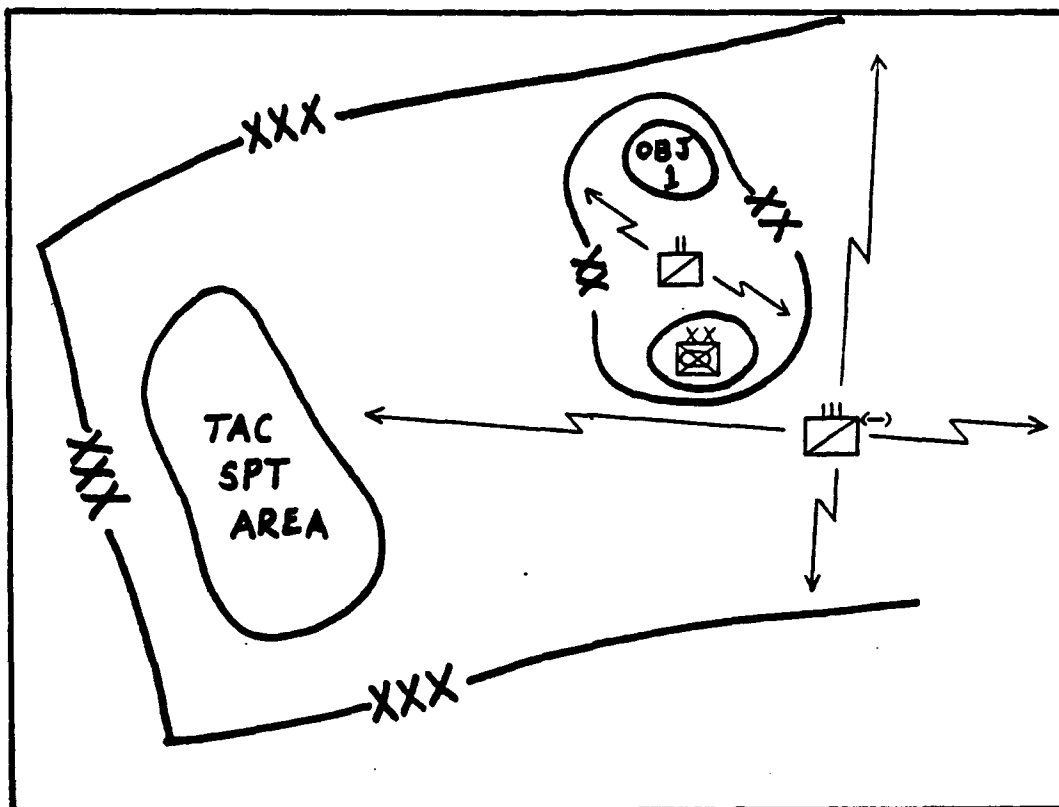


Figure 3: Transition from Phase 2 to Phase 3 of AirLand Battle Future concept. The cavalry squadron, originally part of the reconnaissance task force, is placed under OPCON to the maneuver division commander and operates within the division battle area designated by corps. Having maintained continuous contact with the enemy through Phases 1 and 2, the squadron is poised to hand over the battle to the attacking brigades.

that is, when the division is in direct contact with the enemy -- the squadron returns to the control of the reconnaissance task force, which continues to provide general support.

An important consideration for future doctrine is protection of the force. At the point of battle handover reconnaissance and combat forces are in close

proximity, increasing the possibility of confusion and fratricide. A misstep here could tip off the enemy about the location of our main effort and therefore make the mission of the friendly force more costly. Another protection challenge is ensuring the survival of our far-flung reconnaissance assets. Dispersed throughout the detection zone, they will often roam outside the range of supporting artillery.

Two of the ways of protecting the force have already been discussed. They are the measures for flexibility and effective command and control that should be built into future doctrine on battle handover. Specifically, by observing the principles of recon pull -- decentralized operations, aggressive reconnaissance, agile maneuver -- the force as a whole will experience greater success at lower cost. And by placing reconnaissance elements under OPCON to maneuver units entering the battle zone, the handover should occur smoothly.

The reconnaissance force can be further protected by designing an organization that is mobile, light, and stealthy. The present cavalry regiments exhibit the first of these traits, but they are conspicuously lacking in the other two. To enhance survival, the reconnaissance task force should consist primarily of wheeled vehicles, which are lighter, faster, and quieter than anything on tracks. It should also

possess scout helicopters backed up by a handful of attack helicopters for local security. Such an organization would require a relatively small logistics tail, an important consideration when operating far from secure areas.

The current organizational framework of the armored cavalry regiment, with the modifications noted above, would be an excellent base unit for the reconnaissance task force.⁵³ But because of the emphasis on stealth and agility, the commander should avoid using it in a combat role. Doing so would magnify its vulnerabilities by forcing concentration and exposing it to direct enemy fire. Today's armored cavalry regiments -- arguably the most potent brigade-size fighting units in the world -- are clearly different from what the reconnaissance task forces of the future ought to look like. Treating them as if they were the same would be a waste of a valuable resource.

Military theorists have long understood the important relationship between reconnaissance and combat forces -- the defining feature of battle handover under nonlinear conditions. The former identifies the enemy's center of gravity and decisive points, while the latter attacks them. Obviously, the success of the handover depends heavily on the quality and quantity of the reconnaissance.

As the U.S. Army prepares for future war it must formulate a reconnaissance doctrine to meet the challenges of a nonlinear environment. That implies the creation of a reconnaissance organization that is flexible -- larger, lighter, and more agile than at present. It demands tactics, techniques, and procedures that facilitate command and control under exceedingly fluid conditions. Finally, it must protect the force to ensure our ability to conduct sustained operations.

AirLand Battle Future anticipates a style of warfare that the United States Army is capable of fighting, given modifications to our current linear mindset. Particularly in the area of battle handover, we must strive for a doctrine that is as effective under nonlinear conditions as our current doctrine is for linear. Our challenge is to perfect it in peacetime so that it may never be tested in war.

NOTES

¹ U.S. Army Field Manual 100-5, Operations, May 1986, 14. This is the most recent edition of a manual which has been revised routinely over the years. In the 1982 edition, noted in the opening paragraph, the subject of operational art reappeared after a long absence.

² Ibid., 7.

³ U.S. Army Combined Arms Combat Development Activity (now Combined Arms Command), "Operational Concept for Non-Linear Warfare," 22 Feb 90, 1.

⁴ U.S. Army Field Manual 101-5-1, Operational Terms and Symbols, Oct 85, 1-60.

⁵ U.S. Army Field Manual 17-95, Cavalry Operations, 14 Feb 86, 6-1.

⁶ Sun Tzu, The Art of War, transl. by Samuel B. Griffith (New York: Oxford University Press, 1963), 100.

⁷ Antoine Henri Jomini, The Art of War, in Roots of Strategy, vol. 2 (Harrisburg, PA: Stackpole Books, 1987), 537.

⁸ Ibid.

⁹ Sun Tzu, The Art of War, 98.

¹⁰ Carl von Clausewitz, On War, Peter Paret and Michael Howard, eds. (Princeton, NJ: Princeton University Press, 1976), 595-6.

¹¹ Ibid., 596.

¹² Ferdinand O. Miksche, Attack (New York: Random House, 1942), 16.

¹³ William S. Lind, Maneuver Warfare Handbook (Boulder, CO: Westview Press, 1985), 18.

¹⁴ Jomini, The Art of War, 466-9.

¹⁵ James J. Schneider and Lawrence L. Izzo, "Clausewitz's Elusive Center of Gravity," Parameters, Sep 87, 56.

¹⁶ Ibid.

- 17 Ibid., 57.
- 18 Sun Tzu, The Art of War, 77.
- 19 Lind, Maneuver Warfare Handbook, Chap. 1, 4-8.
- 20 Ibid., 101.
- 21 John Boyd, "Patterns of Conflict" (undated, unpaginated lecture notes, property of Major Fred Keinle); Lind, Maneuver Warfare Handbook, 5.
- 22 Boyd, "Patterns of Conflict," no page number.
- 23 Ibid.
- 24 Lind, Maneuver Warfare Handbook, 7.
- 25 Richard Simpkin, Race to the Swift (London: Brassey's Defence Publishers, 1985), 202.
- 26 Ibid.
- 27 Timothy T. Lupfer, The Dynamics of Doctrine: The Changes in German Tactical Doctrine during the First World War (Ft. Leavenworth, KS: Combat Studies Institute, U.S. Army, 1981), 42.
- 28 Ibid., 41.
- 29 Ibid., 44.
- 30 Ibid.
- 31 Ibid.
- 32 Rommel served in France at the beginning of the war, a time when maneuver was still possible. By 1916 he was reassigned to the Rumanian front where he began perfecting his tactical concepts. Erwin Rommel, Attacks (Vienna, VA: Athena Press, 1979), Chaps. 1 and 2.
- 33 The account of the battle at Kuk mountain is from Rommel, Attacks, 235-250.
- 34 Ibid., 236.
- 35 Ibid., 238.
- 36 Ibid., 239.
- 37 Ibid., 240.

38 Boyd, "Patterns of Conflict," no page number. Some observers take a more skeptical view of the German's acceptance of blitzkrieg tactics, citing the institutional reluctance of the Wehrmacht to modernize. "In the German Field Army after mobilization, only roughly one in twenty of its divisions was panzer, and just one in ten was fully motorized . . ." Matthew Cooper, The German Army 1933-1945 (Chelsea, MI: Scarborough House, 1990), 154.

39 Lind, Maneuver Warfare Handbook, 6.

40 The definition is my own. I could not find a more definitive one in any tactical or reference manual, though the topic of battle handover is discussed in virtually all of them.

41 Field Manual 71-100, Division Operations, suggests a way of mitigating this problem. Withdrawing units should "pass around the flanks of units in position" and move expeditiously to release points "well to the rear of those positions" (6-18 to 6-19).

42 Current U.S. Army doctrine on battle handover appears in the chapters on defense in the following field manuals: FM 71-2 (The Tank and Mechanized Infantry Battalion Task Force), FM 71-3 (Armored and Mechanized Infantry Brigade), FM 71-100 (Division Operations), and FM 100-15 (Corps Operations).

43 Field Manual 71-100, Division Operations, 6-18.

44 U.S. Army Aviation Center, Ft. Rucker, AL, "Draft Aviation White Paper," 2 May 90, 4-5.

45 The AirLand Battle Future operational concept is explained in detail in two Combined Arms Command papers: "AirLand Battle-Future Umbrella Concept," 10 Sep 90 (final coordinating draft), and "Evolution of the Army Using Insights from AirLand Battle-Future" (final coordinating draft), 11 Sep 90. My discussion of AirLand Battle Future is based primarily on these sources.

46 Combined Arms Command, "Evolution of the Army Using Insights from AirLand Battle-Future" (final coordinating draft), 23. MAJ Randal L. Schroeder of the Doctrine Integration Division, Concepts and Doctrine Directorate, Combined Arms Command, predicted that the reconnaissance task force will look much like the armored cavalry regiment of today. Such an organization would provide combat power to complement

the reconnaissance capability. For reasons I will discuss, I believe a different (i.e., lighter) organization would be more appropriate.

47 Combined Arms Command, "AirLand Battle-Future Umbrella Concept" (final coordinating draft), 28.

48 In each of the field manuals listed in note 42, above, a section on "battle handover" appears in the chapters on defense. One must look in other sections, such as "passage of lines," to read about the applicability of battle handover in the offense.

49 Scott Moore, "Recon-Pull: A Marriage of 2s and 3s," Marine Corps Gazette, Aug 90, 71.

50 Lind, Maneuver Warfare Handbook, 18.

51 Simpkin, Race to the Swift, 202.

52 Combined Arms Command, "AirLand Battle Future Alternate Base Case Study, Phase II," 3 Mar 90, V3-V5.

53 Current organizations for the ground and air components of the armored cavalry regiment are in Field Manual 17-95, Cavalry Operations, chaps. 1 and 8.

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